

U4 Test 1 Review

Expand each logarithm.

1) $\log_5 \left(\frac{u}{v^4} \right)^6$

2) $\log_6 \left(\frac{u}{v^3} \right)^6$

3) $\log(a^2 \cdot b)^6$

4) $\log_4 (ab^6)^3$

Find the inverse of each function.

5) $y = \log_{\frac{1}{2}}(x-1) + 8$

6) $y = \log_2 x^4 - 5$

7) $y = \log_3 4^x - 10$

8) $y = \ln(-4x-7)$

9) $y = \log_3 \frac{5^x}{-2}$

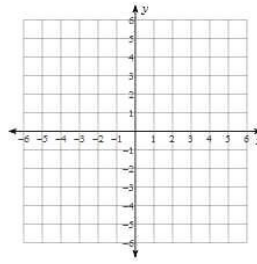
10) $y = \frac{2^x - 1}{-4}$

11) $y = (3^x - 2)^{\frac{1}{4}}$

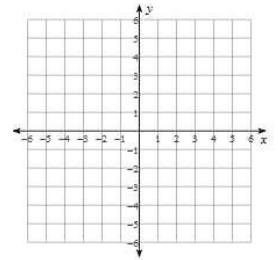
12) $y = \left(\frac{5^x}{4} \right)^{\frac{1}{5}}$

Find the inverse of each function. Then graph the function and its inverse.

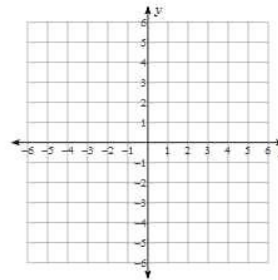
21) $h(x) = -\frac{2}{5}x - 2$



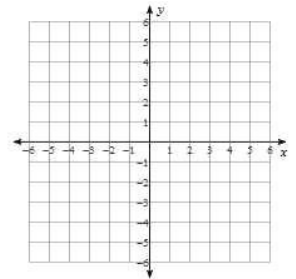
22) $f(x) = x^3$



23) $f(x) = 5 - \frac{9}{2}x$



24) $g(x) = (x-1)^3$



Solve each equation. Round your answers to the nearest ten-thousandth.

13) $\log_5 x - \log_5(x-4) = 3$

14) $\log_7 x - \log_7(x+6) = 2$

15) $\log_9(x+46) + \log_9 x = \log_9 47$

16) $\log_2(x+5) - \log_2 x = 5$

Rewrite each equation in logarithmic form.

25) $12^y = x$

26) $9^p = 193$

27) $a^b = 73$

28) $17^n = m$

Rewrite each equation in exponential form.

29) $\log_y x = 5$

30) $\log_y x = z$

31) $\log_{15} x = y$

32) $\log_{12} m = -4$

Condense each expression to a single logarithm.

17) $\log_2 u + 3\log_2 v + 5\log_2 w$

18) $\ln c + 3\ln a - 3\ln b$

19) $12\log_9 z + 12\log_9 x - 6\log_9 y$

20) $\log_8 10 + 2\log_8 11 + \frac{\log_8 7}{3}$

Find the inverse algebraically. Restrict the domain if the function is not one-to-one. Complete the table.

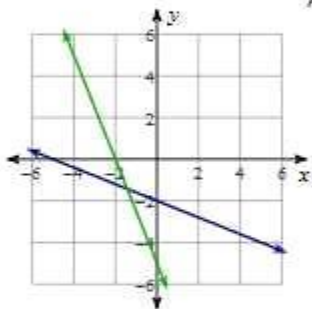
| | | |
|-----------------------|-----------------------|---------------|
| $f(x) = 2(x+5)^3 - 3$ | $f(x) = 2(x+5)^3 - 3$ | $f^{-1}(x) =$ |
| D: | | D: |
| : | | R: |

Answers to U4 Test 1 Review

- 1) $6\log_5 u - 24\log_5 v$ 2) $6\log_6 u - 18\log_6 v$ 3) $12\log a + 6\log b$ 4) $3\log_4 a + 18\log_4 b$
 5) $y = \left(\frac{1}{2}\right)^{x-8} + 1$ 6) $y = (2^{x+5})^{\frac{1}{4}}$ 7) $y = \log_4 3^{x+10}$ 8) $y = \frac{e^x + 7}{-4}$
 9) $y = \log_5 (-2 \cdot 3^x)$ 10) $y = \log_2 (-4x + 1)$ 11) $y = \log_3 (x^4 + 2)$ 12) $y = \log_5 4x^5$
 13) $\{4.0323\}$ 14) No solution. 15) $\{1\}$ 16) $\{0.1613\}$
 17) $\log_2 (uw^5v^3)$ 18) $\ln \frac{ca^3}{b^3}$ 19) $\log_9 \frac{z^{12}x^{12}}{y^6}$ 20) $\log_8 (10 \cdot 11^2 \sqrt[3]{7})$

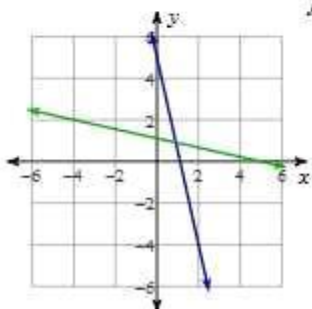
21)

$$h^{-1}(x) = -5 - \frac{5}{2}x$$



23)

$$f^{-1}(x) = -\frac{2}{9}x + \frac{10}{9}$$



25) $\log_{12} x = y$

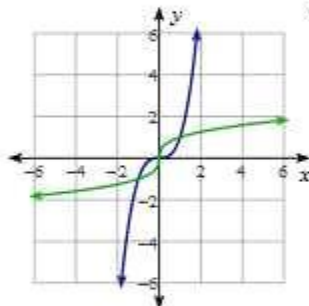
26) $\log_9 193 = p$

29) $y^5 = x$

30) $y^z = x$

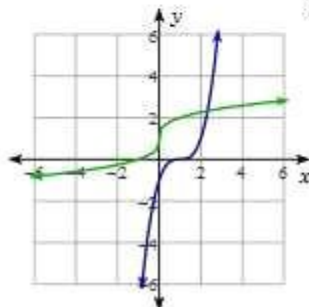
22)

$$f^{-1}(x) = \sqrt[3]{x}$$



24)

$$g^{-1}(x) = \sqrt[3]{x} + 1$$



27) $\log_a 73 = b$

28) $\log_{17} m = n$

31) $15^y = x$

32) $12^{-4} = m$

33. $f(x)$: D: $(-\infty, \infty)$ R: $(-\infty, \infty)$

$$f^{-1}(x) = \sqrt[3]{\frac{x+3}{2}} - 5$$

D: $(-\infty, \infty)$ R: $(-\infty, \infty)$